Beam measurements on the H^- Source and Low Energy Beam Transport system for the Spallation Neutron Source*

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The SNS ion source must provide 50mA of H^- beam current at 6% duty factor (1ms pulses at 60Hz) with a normalized rms emittance of 0.2π-mm-mrad. The H^- beam is accelerated to 65keV and matched into a 2.5MeV RFQ by means of a Low Energy Beam Transport (LEBT) system. For this application, a radio-frequency driven, magnetically-filtered multicusp source has been developed at LBNL. The LEBT system is all electrostatic to prevent space charge compensation and consists of two Einzellenses, whereby the second is also used for beam steering and chopping. Experimental results, including emittance, chopping, and steering measurements, on the performance of the ion source and LEBT system will be presented.

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